

REMARKS/ARGUMENT

Applicants submit herewith a new information disclosure statement that correctly cites the article (X. Li and J. A. Ritcey, "Bit-interleaved coded modulation with iterative decoding using soft feedback" Electronic Letters, vol. 34, No. 10; pp. 942-943; 14th May 1988). Applicants regret any confusion caused by citation of incorrect page numbers.

Applicants further add citations to the remaining references identified on pages 1 and 2 of the specification but that were not cited on the previous information disclosure statement. Applicant include herewith copies of these additional references.

Applicants submit herewith a abstract to overcome the Examiner's objection.

The disclosure has been amended to overcome the Examiner's objection.

Claims 1-17 stand allowed.

Claims 18-20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Li et al. (Bit-Interleaved Coded Modulation with Iterative Decoding; IEEE Communications Letters; Nov. 1997 (pages 169-171). Applicants respectfully traverse this rejection, as set forth below.

In proceedings before the Patent and Trademark Office, "the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art". In re Fritch, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (citing In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). "The Examiner can satisfy this burden only by showing some objective teaching in the prior art or that knowledge

generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references”, In re Fritch, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992)(citing In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988)(citing In re Lalu, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1988)).

Moreover, **the mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.** In re Gordon, 733 F.2d at 902, 221 USPQ at 1127. Moreover, **it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious.** In re Gorman, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed.Cir.1991). See also Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1138, 227 USPQ 543, 547 (Fed.Cir.1985).

Furthermore, "all words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Independent Claim 13, as amended, requires and positively recites, a wireless communication transmitter apparatus, comprising: “an input for receiving a bit stream”, “a coder coupled to said input for performing a coding operation on said bit stream, said coder having an output for providing a result of said coding operation”, “a first modulator coupled to said coder output for modulating said result, and a first antenna coupled to said first modulator for transmitting said modulated result on a wireless communication channel”, “**an interleaver coupled to said coder output for producing an interleaved version of said result**” and “**a second modulator coupled to said interleaver for modulating said interleaved version, and a second antenna coupled to said second**

modulator for transmitting said modulated interleaved version on a wireless communication channel”.

In contrast, Applicants’ Figure 1 discloses a prior art apparatus that implements turbo coding by using two convolutional coders (CC 16 & 17) in which interleaver 10 is coupled to the input of coder 17 – NOT to the output of coder 17 or the output of coder 16. Thus there is one interleaver 10 coupled to the input of coder 17 which is coupled to one and only one of a dual transmit antenna system. As such, Figure 1 does not teach or suggest, “an **interleaver coupled to said coder output** for producing an interleaved version of said result”, as required by Claim 18.

Applicants Figure 2 discloses a prior art apparatus for a single transmit antenna system. While Figure 2 discloses interleaver 21 coupling the output of coder (CC) to an input of modulator (mod), the implementation is for a single transmit antenna system. As such, Figure 2 fails to teach or suggest, “a **second modulator coupled to said interleaver** for modulating said interleaved version, and a **second antenna coupled to said second modulator** for transmitting said modulated interleaved version on a wireless communication channel”, as is further required by Claim 18.

Applicants Figure 8 discloses a prior art apparatus for a dual transmit antenna system, however, it fails to teach or suggest use of any interleavers. As such, Figure 8 fails to teach or suggest, “an **interleaver coupled to said coder output** for producing an interleaved version of said result” and “a **second modulator coupled to said interleaver ...**”, as is further required by Claim 18.

The Examiner bases his rejection on the following premise: “however, the AAPA further in Fig. 2 teaches a single path transmitter wherein the function of the interleaving is performed after the encoding, therefore **there is no criticality in interleaving before the encoding or after the encoding process this is a matter of design choice, thus**

satisfying the limitations of the claim.”

Applicants respond that assuming, arguendo, the Examiner's above determination is correct, it is only correct for a single path transmitter. When a dual path transmitter is involved, however, it is more than just a matter of design choice. Figure 1 clearly shows the use of two coders (16 & 17) in the design case where the interleaver is coupled to an input of one of the decoders. In contrast, by coupling the interleaver 92 between the output of coder 91 and the input of modulator (mod.), Applicants were able to omit one of the two coders, which results in a significant circuit/design savings to the present apparatus. Nowhere does the Admitted Prior Art suggest such a savings. Moreover, the Examiner has failed to identify any other prior art that teaches or suggests such an implementation. As such, the Examiner has failed to present a prima facie case of the obviousness of Claim 18. The 35 U.S.C. 103(a) rejection of Claim 18 is overcome.

Claims 19-20 stand allowable as depending (directly or indirectly) from allowable Claim 18 and by including further limitations not taught or suggested by the reference of record.

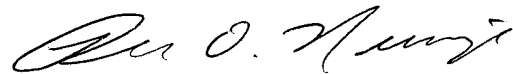
Claim 19 further defines the apparatus of claim 18, wherein said coder is a convolutional coder. Claim 19 depends from Claim 18 and is therefore allowable for the same reasons set forth above for the allowance of Claim 18.

Claim 20 further defines the apparatus of claim 18, wherein one of said first and second modulators is a QPSK modulator. Claim 20 depends from Claim 18 and is therefore allowable for the same reasons set forth above for the allowance of Claim 18.

New Claim 21 is allowable for similar reasons to those set forth in support of the allowance of Claim 18.

Claims 1-17 stand allowed. Claims 18-21 stand allowable for the reasons presented above. Applicants respectfully request allowance of the application at the earliest possible date.

Respectfully submitted,



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